New York City Transit

Current Asset Management Practices

4th Federal Transit Administration
State of Good Repair Conference
July 16-18, 2012 • Philadelphia, PA

# Overview of Assets

Visible Infrastructure

- 6,737 Railcars
- 4,336 Buses
- 468 Stations (with 409 elevators/escalators)

Overview of Assets

Invisible Infrastructure

230	Pump Rooms
216	Power Substations
720	Miles of Track
3,446	Miles of Power Cabling
190	Fan Plants
16	Railcar Maintenance/Overhaul Shops
24	Rail Yards
728	Signal track miles (183 interlockings)
1,541	Mainline Switches
23	Bus Depots/Shops
136	Subway tunnel route miles
70	Elevated structure route miles
22	At-grade route miles
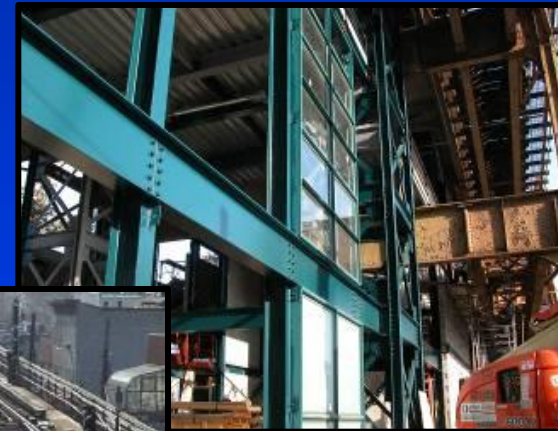
Capital Planning Process

20-Year Needs Assessment

Asset Inventory and Condition Assessment → **Investment Pace & Strategy** → **20-Year Investment Summaries**

Rolling Five-Year Plan Process

Project Problem Statement → **Project Scoping** → **Design/Construction**

20-Year Needs Assessment
Step One - Asset Inventory & Conditions

➢ Asset inventory updated by user groups

➢ Includes <u>location</u>, <u>age</u>, <u>most recent capital investment</u>, and a <u>1-4 condition rating</u>

➢ Condition of assets: typically an extract of more detailed maintenance data

➢ Determination of whether asset is in good repair or not

20-Year Needs Assessment
Step Two - Investment Pace and Strategy Statements

➢ Statement required for each investment group (e.g., signals, station rehabilitation)

➢ Provides rationale/justification for level of investment and timing

➢ Pace and strategy also guided by other agency planning efforts (e.g., compliance issues, operations directives, constructability)
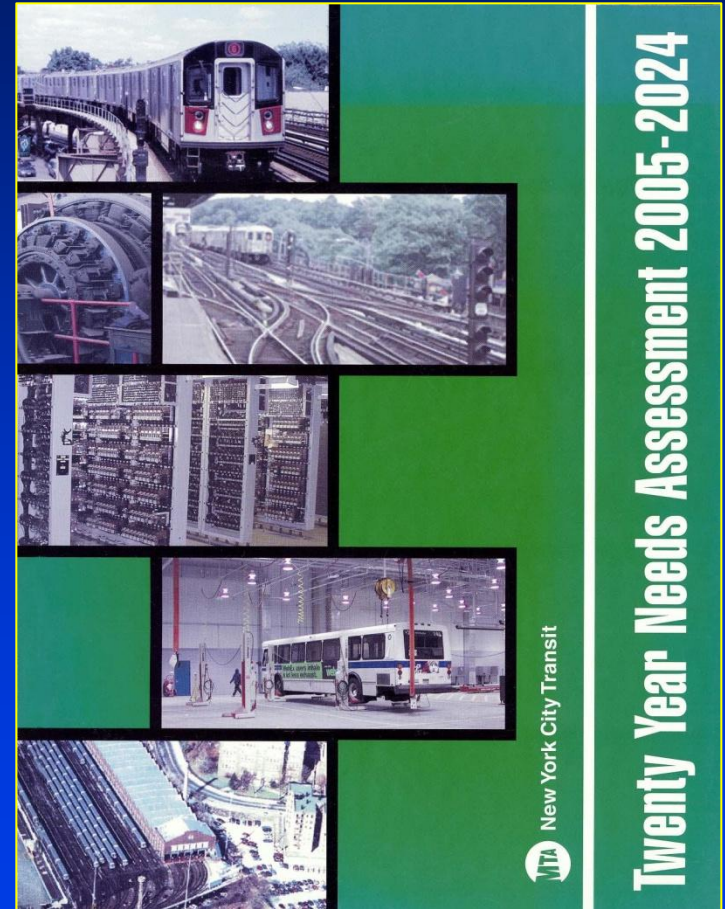
20-Year Needs Assessment
Final Product

Investment strategy of five year increments:

➤ Number of units (total #, in SGR)

➤ Investment projections, in dollars and units

➤ Updated every five years

➤ Broadly defined dollar constraints

Twenty Year Needs Assessment 2005-2024

New York City Transit

Managing the Asset Data

Project Status Reporting (PSR) system

- Home-grown system (Oracle server-Windows client)
  - Project budgets/milestones
  - Project description/purpose

- Asset records have been added to the system
  - Project-to-asset linkages for reporting on capital projects from asset perspective

- Outputs include:
  - Capital program progress to MTA Board
  - Website information
  - Federal biennial "satisfactory continuing control"

- Continual enhancements with a dedicated staff of application specialists

Examples of Asset Groups

- Track
- Subway Cars

- Traction Power
- Stations

- Each group has different levels of asset management "sophistication"

- Each has different levels of detail depending on the maintainer and the needs of the capital plan and 20-year needs process (grain of investment)

Track and Switches
720 miles of track, 1,541 switches

Multi-level inspection and assessment protocols; weekly, monthly, quadrennial condition assessments

Detailed database by track segment:
- Defects to be fixed by maintenance.
- Major issues affecting replacement decisions, e.g. track type, alignment, etc.
- Expected remaining useful life

Track reconstruction priorities weighed by ROW access opportunities

Condition data is maintained in Excel spreadsheets based on quadrennial condition assessments

Subway Cars
6,737 cars in fleet

➢ Replacements programmed on 40-year useful life, based on irreparable structural fatigue

➢ Detailed investigations influence specific retirement decisions, e.g. 42-year-old cars retained while 36-year-old cars with structural deterioration were retired

➢ Summary of car class characteristics is extracted from detailed operating data and maintained in Excel spreadsheets

Traction Power

216 substations; 303 circuit breaker houses;
3,446 miles of power cables

Substations components rated separately, informing a **component based investment** strategy
- ➢ Enclosures
- ➢ Rectifiers
- ➢ Utility feeders/transformers

Excel spreadsheets updated
from operating information
- ➢ Asset condition determines SGR status

468 Stations

277 subway, 142 elevated, 49 at-grade

➢ Condition-based survey of station elements – performed every five years

➢ Coordinated consultant teams collect data over a 12-month period

➢ Over 14,000 components rated, including: stairs, platforms, mezzanines, windscreens, and canopies

➢ Condition data kept in an Oracle database; allows tracking of repair progress and updated condition information

NYCT has numerous, complex and sizeable assets to maintain

Several Means to End

➢ Different asset **=** different means of gathering and maintaining asset information

➢ Simple spreadsheet tools

Value of Accurate / Timely Data

➢ Proper planning leads to fewer surprises

➢ Foresees size of problem/scale of the roll-out for asset investment

Consistency of Condition Data from Program to Program

➢ Changes over time must be explainable by investment, degradation, or obsolescence.

Next Steps

Move to enterprise-wide asset management, to align capital investment with maintenance and operations toward optimal whole-life costs

➢ Decide on suitability of available standards: PAS 55, ISO 55000

➢ Design standardized core business processes -- work orders; failure analysis; performance reporting

➢ Roll out as a pilot to selected infrastructure categories

➢ Develop models for whole life costs, including O&M, capital renewal/replacement